

**Michael Stephen Saxon**  
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### Education

**University of California, Santa Barbara**

*Ph.D.*, Computer Science: **4.0/4.0**

*Advisor: William Yang Wang, Ph.D.*

Santa Barbara, CA

9/2020–*present*

**Arizona State University**

*MS.*, Computer Engineering: **3.9/4.0**

**Thesis Title**—Characterizing Dysarthric Speech with Transfer Learning

*Advisors: Visar Berisha, Ph.D. & Sethuraman Panchanathan, Ph.D.*

Tempe, AZ

8/2018–5/2020

**Arizona State University**

*BSE.*, Electrical Engineering; *Minor*, Mathematics: **Magna Cum Laude**

**Thesis Title**—Using Goodness of Pronunciation Features for Spoken Nasality Prediction

*Advisor: Visar Berisha, Ph.D.*

Tempe, AZ

8/2014–8/2018

### Publications

#### Preprints

^ **Representative**    ☆ **Award**

- p1. X. Wang, W. Chen, **M. Saxon**, WY. Wang, “Counterfactual Maximum Likelihood Estimation for Training Deep Networks,” *Preprint* [arXiv:2106.03831](#), Jun 2021.

#### Conference and Journal

- c1. **M. Saxon**, S. Levy, X. Wang, A. Albalak, WY. Wang, “Modeling Disclosive Transparency in NLP Application Descriptions,” **EMNLP 2021** [arXiv:2101.00433](#), Oct 2021.
- c2. **M. Saxon**, S. Choudhary, J. McKenna, A. Mouchtaris, “End-to-End Spoken Language Understanding for Generalized Voice Assistants,” **Interspeech 2021**, Brno, CZ, Aug 2021.
- c3. S. Levy, **M. Saxon**, WY. Wang, “The Truth is Out There: Investigating Conspiracy Theories in Text Generation,” [arXiv:2101.00379](#), **Findings of ACL 2021**, Online, Aug 2021.
- j1. **M. Saxon**, A. Tripathi, Y. Jiao, J. Liss, V. Berisha, “Robust Estimation of Hypernasality in Dysarthria,” ^ **IEEE Trans. on Audio, Speech, and Language Processing**, Vol. 28, pp 2511-2522, 2020.
- c4. J. McKenna\*, S. Choudhary\*, **M. Saxon\***, G. Strimel, A. Mouchtaris, “Semantic Complexity in End-to-End Spoken Language Understanding,” **Interspeech 2020**, Shanghai, CN, 2020.
- c5. M. Moore, P. Papreja, **M. Saxon**, V. Berisha, S. Panchanathan, “UncommonVoice: A Crowdsourced Dataset of Dysphonic Speech,” **Interspeech 2020**, Shanghai, CN, 2020.
- c6. M. Moore, **M. Saxon**, H. Venkateswara, V. Berisha, S. Panchanathan, “Say what? A dataset for exploring the error patterns that two ASR engines make,” **Interspeech 2019**, Graz, AT, 2019, pp. 2528-2532.
- c7. **M. Saxon**, J. Liss, V. Berisha, “Objective Measures of Plosive Nasalization in Hypernasal Speech,” 2019 **IEEE ICASSP 2019**, Brighton, UK, 2019, pp. 6520-6524.
- c8. T. Houghton, **M. Saxon**, Z. Song, H. Nyugen, H. Jiang and H. Yu, “2D Grating Pitch Mapping of a through Silicon Via (TSV) and Solder Ball Interconnect Region Using Laser Diffraction” **IEEE 66th Electronic Components and Technology Conference (ECTC)**, Las Vegas, NV, 2016, pp. 2222-2227. (Texas Instruments Best Student Interactive Paper Award)

## Workshops

- w1. **M. Saxon**, S. Levy, X. Wang, A. Albalak, WY. Wang, “Modeling Disclosive Transparency with GPT-2,” SoCal NLP 2021 , Virtual, March 2021.
- w2. **M. Saxon**, J. Liss, V. Berisha, “A new model for objective estimation of hypernasality from dysarthric speech,” Workshop on Signal Analytics for Motor Speech (SAMS), Motor Speech Conference 2020, Santa Barbara, CA, February 2020.
- w3. **M. Saxon\***, S. Bhandari\*, L. Ruskin, G. Honda, “Word Pair Convolutional Model for Happy Moment Classification,” 2<sup>nd</sup> Workshop on Affective Content Analysis, AAAI 2019, Honolulu, HI, 2019, pp. 111-119. (Workshop Oral; CL-Aff Shared task runner up, 2/47)
- w4. B. Gupta, **M. Saxon**, T. McDaniel, S. Panchanathan, “Chat-Box: Proposing a Mood Analyzer for Individuals with Social Interaction Disabilities,” International Conference on Human-Computer Interaction, Las Vegas, NV, 2018, pp. 394-401.

## Professional Experience

**Amazon** (Alexa AI Search) Manhattan Beach, CA  
*Applied Science Intern* 6/2021–present  
*Mentors: Luca Soldaini, Eric Lind, Rik Koncel-Kedziorski, Alessandro Moschitti.* End-to-end spoken QA.

**Amazon** (Alexa Edge ML) Pittsburgh, PA  
*Applied Science Intern* 1/2020–8/2020  
*Mentors: Samridhi Choudhary, Joe McKenna, Athanasios Mouchtaris.* Investigated the link between semantic complexity of datasets (entropy and graphical measures) and the performance of SOTA E2E SLU models on them, [C4]. Developed a novel model stacking specialized transformer ASR and pretrained BERT model with differentiable interface for E2E SLU optimization, [C2].

**Amazon** (Alexa Edge ML) Pittsburgh, PA  
*Applied Science Intern* 5/2019–8/2019  
*Mentors: Joe McKenna, Samridhi Choudhary, Kai Wei, Athanasios Mouchtaris.* Integrated neural end-to-end spoken language understanding for intent classification for Alexa. Explored architectures for “semantic endpointing,” stopping the recurrent inference once sufficient words have been heard.

**Aural Analytics** Scottsdale, AZ  
*Research Engineer Intern* 12/2018–4/2019  
*Mentor: Shira Hahn.* Integrated cloud-based ASR and developed in-house ASR models for integration in a clinical speech assessment product. Explored the design of deployable ASR systems robust to quality reduction under dysarthria.

**General Dynamics Mission Systems** Scottsdale, AZ  
*Embedded Software Engineering Intern* 5/2017–7/2017  
Software- and hardware-level testing for HOOK3 Combat Survival Radio, Agile issue management.

**Arizona State University Engineering Tutoring Center** Tempe, AZ  
*Tutor* 9/2015–10/2016  
Tutoring for homework and projects in undergraduate analog and digital circuits, electromagnetics, calculus, discrete math, C++, algorithms, differential equations, microprocessor design, and physics.

### Research Interests

Natural language processing; dataset analysis; ethics and transparency in AI; end-to-end spoken language understanding; representation and transfer learning; semi-supervised learning; dysarthric speech

### Skills

#### Software Proficiencies

Python (Pytorch, HuggingFace, Numpy, SciPy, AllenNLP), BASH, Apache Spark, C/C++, OpenCV, Kaldi, MATLAB, Linux, Verilog

#### Conceptual

Deep learning, pattern matching, natural language processing (NLP), automatic speech recognition (ASR), digital signal processing (DSP), embedded programming, multimedia processing, sensor fusion

#### Selected Graduate Coursework

Probability; information theory; speech processing, recognition, compression; neural computer vision; image compression and processing; syntax; semantics; spectral graph theory and computation; statistical machine learning

### Service

<i>Reviewer</i> , EMNLP Insights from Negative Results Workshop	2021
<i>Reviewer</i> , IEEE ICASSP	2020
<i>Reviewer</i> , IEEE GlobalSIP	2019
<i>Mentor</i> , FIRST Robotics Team 2478 (Westwood Robotics), Mesa, AZ	2014–2016

### Honors

<b>National Science Foundation</b> <i>Graduate Research Fellowship</i> (NSF GRFP)	2020
<b>University of California, Santa Barbara</b> <i>Center for Responsible Machine Learning Fellowship</i>	2020
<b>Phi Kappa Phi</b> <i>Inductee</i>	2016
<b>IEEE Eta Kappa Nu</b> (HKN) <i>Inductee</i>	2015
<b>Arizona State University</b> <i>Presidential Scholarship</i> (Full Tuition)	2014
<b>Boy Scouts of America</b> <i>Eagle Scout Award</i>	2011